SECTION 21

HARDWARE

21.1 REFERENCES

(Not Used)

21.2 INTRODUCTION

This Section contains the Contractor Design and Provide general requirements for door and other closure hardware throughout the Vessel, and for other miscellaneous hardware on the Vessel.

For WSF Fleet-wide Standardization purposes, End No. 1 of the Vessel shall always be considered the bow, and this designation shall delineate port and starboard, fore and aft wherever they are addressed in the Technical Specification.

21.3 GENERAL

Hardware on all doors and other closures shall meet the requirements of the Authoritative Agencies including 46 CFR and those associated with Underwriter's Laboratories three (3) hour label "A" Class rating for single swing doors.

All hardware shall be supplied by the door manufacture. All locks, padlocks and cylinders shall be supplied by one (1) manufacturer. Security locks shall be provided as set forth in Section 95 of the Technical Specification.

NOTE: The Vessels shall have an integrated surveillance camera and monitoring, access control, and intrusion alarm system security system which shall require security locks and access monitoring/control. See Sections 4, 12, and 95 of the Technical Specification for system requirements.

All hardware shall be of the best marine quality, heavy-duty type, ruggedly constructed, with door exterior satin stainless steel finish. Screws for securing items to closures shall be stainless steel, countersunk and finished to suit the item secured.

All doors shall have bored locks with ADA approved lever handles with turn back on both sides of the door.

All door hardware shall be Commercial Grade 1.

All door hardware attachment fasteners shall be provided with square, Torx®, or hex Allen type. The use of slotted or Phillips head fasteners is prohibited. All fasteners shall have a small amount of Loc-Tite "BLUE", or equal, applied to the threads to prevent them backing out under use.

Vandal-proof screws shall be provided for hardware in all public areas and shall have countersunk heads where practical.

The use of pop rivets for hardware fasteners is prohibited.

Lock strikes shall have extended lips to protect the closure trim from the latch bolts. All doors shall have a latch throw of ¾ inch. A minimum setback is to be determined to ensure adequate hand clearance is provided between door hardware and door frames.

Hardware not specifically covered shall be comparable to that described herein for similar applications.

Mechanical holdback hardware shall be provided for all joiner and acoustic doors not fitted into fire boundaries.

21.4 LOCKS AND LATCHES

21.4.1 General

Unless directed otherwise in the Technical Specification, the Contractor shall provide the locks and latches for all doors. For WSF Homeland Security Standardization purposes, unless otherwise noted, all lock sets shall be BEST LOCK CORPORATION, and shall be provided with construction cores (painted black) with key blanks as set forth in the *KEYS* Subsection in this Section of the Technical Specification. Strikers, fasteners, and other items and devices shall be provided as required for complete and functional doors.

Lock sets shall be Mortise, Series 35H.

Trim shall be Style H, Lever 14. Escutcheon shall be Style J, 2¼ inches × 7½ inches.

Finish shall be 626, satin chromium plated.

Door lockset hardware exposed to weather shall have drop forged brass, chrome plated escutcheon plates.

For cylinder locks and/or deadbolts for doors over two (2) inches in thickness see www.bestaccess.com/productslink.htm.

See Section 95 of the Technical Specification for additional security lock requirements.

21.4.2 Mortise Lockset Function

Dormitory or Exit Lock, "FW" Function: Latch bolt by knob either side except when outside knob is locked when deadbolt is extended. Deadbolt by key outside and turn knob inside when deadbolt is extended. Turning inside knob retracts both latch bolt and deadbolt simultaneously and unlocks outside knob.

Communicating Door Lock, "C" Function: Latch bolt operated by knob either side. Deadbolt operated by key either side.

Storeroom Lock, “EW” Function: Latch bolt operated by knob inside and key outside. Outside knob always rigid. Auxiliary bolt deadlocks latch.

Passage Lock, “N” Function: Latch bolt operated by knob either side. Passage latch set shall have Mortise lock levers unlocked both sides at all times.

Classroom Door lock, “J” Function: Latch bolt operated by knob either side except when outside knob is locked by key. When the outside knob is locked, latch bolt is retracted by key outside and by knob on the inside.

21.4.3 Indicator Deadbolt

Indicator deadbolt locks shall be FALCON Series Model D871 26DW/9158-2, or equal. Provide an emergency key and instruction tag number A9159. The indicator deadbolt lock shall be mounted at a height suitable for persons in wheelchairs. The lock shall have a one (1) inch bolt projection, and indicator for "VACANT" or "OCCUPIED". Above deadbolt shall be installed in addition to “Classroom” locksets in all Sun Deck Unisex Restroom doors.

21.4.4 Deadbolt

Provide deadbolt locks, keyed both sides and installed near the tops of doors. Deadbolts shall be BEST LOCK CORPORATION, Model 83T 6M.

Doors providing direct access to the EOS and/or Engineer’s Office shall be provided with dead bolt locks installed on the EOS side of these doors that in case of a major incident, the Engineering Crew can lock these doors securely from inside the EOS.

21.5 KEYS

Provide fifty (50) Grandmaster, stamped 'GM', and fifty (50) Master, stamped 'CREW', keys which shall be BEST LOCK CORPORATION.

21.6 KEY LOCKERS

Key lockers shall be provided in the number, sizes, and locations to stow the keys that come under the supervision of the various Vessel department heads as set forth by the Contractors design. Each locker shall be fitted with hooks, with names or numbers at each hook for readily distinguishing the keys.

Each key locker shall be provided with its own lock and key. All key lockers shall be keyed differently.

At a minimum, key lockers shall be provided in the Master’s Stateroom, Staff Chief Engineer’s Stateroom, Purser’s Office, and Chief Engineer’s Office.

21.7 HINGES

Provide door hinges as described herein. Hinges shall be installed in frames of doors by the door manufacturer prior to shipping. As a minimum, doors up to thirty (30) inches wide shall be provided with four (4) evenly spaced hinges. As a minimum, doors wider than thirty (30) inches shall be provided with five (5) evenly spaced hinges.

Unless approved otherwise by the WSF Representative on a "case-by-case" basis, hinges shall be attached to the door and frame by the use of stainless steel threaded fasteners which allow for door adjustment. Hinges **shall not** be welded to the frame nor the door.

Stainless steel pins shall be provided for all hinges throughout the Vessel.

Non-Removable Pin (NRP) butt hinges shall be provided for all cabins, Staterooms and other spaces where the door to the space opens out. Elsewhere, loose pin type butt hinges shall be used. All butt hinges shall have button tips on both ends and five (5) knuckles. Sizes shall be 4½ inches × 4½ inches. The hinges for heavy duty doors and all doors in accommodation areas shall have ball bearings.

Unless approved otherwise by the WSF Representative, LAWRENCE HINGES, BB5151-A, or equal, heavy weight ball bearing, stainless steel type, shall be fitted on all weather doors, fire screen doors, any door on which a closing device is installed, and doors 36 inches and over wide, except as noted for "A-60" Class doors below. Finish shall be US32 or+ US32D.

Unless approved otherwise by the WSF Representative, all "A-60" Class type fire doors shall be provided with heavy duty bearing type hinges with grease zircs.

Toilet partition door hinges shall be of a spring loaded adjustable type to hold the doors open when not in use.

21.8 DOOR CLOSERS

Unless otherwise noted, for WSF Fleet-wide Standardization, all doors requiring door closers shall have NORTON 7500 Series top jamb with Unitrol® Arm - Heavy Duty. All door closer cover finishes shall be aluminum. The door closers shall be installed on the inside of weather doors.

Door closers shall have sufficient strength to close their attached doors against a 3½ degree Vessel list. Because of past WSF Fleet-wide problems caused by wind, all door closers, of the NORTON type above, shall be adjusted one (1) spring size stronger than normally required for each door type. Fire screen doors shall be demonstrated by actual test to perform this requirement to the satisfaction of the USCG and WSF. Fire screen doors with magnetic holdbacks shall have a spring loaded impetus to "jump start" the door when initially released from the open position.

Throughout the Vessel, all publicly accessed doors, that require more than five (5) pounds force to open, shall be fitted with a power actuated door system to include actuating controls and switches on both sides of the doors the same as set forth in the *POWER ACTUATION DOOR SYSTEMS* Subsection below.

All closure installations shall be in strict accordance with the manufacturer's recommendations as to location, position, fasteners, adjustment and the like. The Contractor shall provide the onsite services of a WSF approved manufacturer's factory technician for assistance in installation design, installation, and set up and adjustment. Any modification outside the parameters of the factory technicians direction of a closure or door hardware to achieve proper door operation **shall not** be acceptable.

21.9 POWER ACTUATION DOOR SYSTEMS

At a minimum, provide HORTON 4100 Series, or equal, with 7-inch wide threshold, switch-operated power assist function door opener systems as set forth in **TABLE 21-1** below. Installations shall include actuating switches or electronic sensors, as indicated, on the outside and inside of listed doors and shall meet the ADA requirements of Section 1B of the Technical Specification. The door actuating switches shall have push plates of six (6) inch diameter minimum. See WSF Drawing. No. 8302-628-004-01 (*latest revision*) for amplification of the methodology on previous installations on WSF Issaquah Class ferries. The Unisex Restroom systems shall be provided with a door lock switch "interlock" to disarm the system when the door is locked from the inside. All power activated door installations shall be provided with all required signage, to include American Assoc. of Automatic Door Manufacturers (AAADM) safety information stickers and symbols. The Contractor shall provide the onsite services of the WSF approved manufacturer's factory technician for assistance in installation design, installation, and set up/light-off and adjustment.

The wheelchair accessible areas shall have the door closers set to a closing speed of at least three (3) seconds from 70F degrees open to a point three (3) inches from the latch. The opening force of all public doors shall not exceed five (5) pounds. The Contractor shall provide the "onsite" services of the WSF approved manufacturer's factory technician for assistance in installation design, installation, and set up and adjustment.

The Vehicle Deck-to-Passenger Deck companionway (walkway), and Passenger Deck-to-Sun Deck (Port and Starboard at Sun Deck level) doors shall be provided with power actuated door systems on the "push" side of the door (installation requires a minimum of six (6) inch clearance above the door) and with IR motion sensor activation (both sides) and presence detector (swing side only). Each abovementioned, in this paragraph, companionway/stairwell door (six (6) per Vessel) shall be provided with HORTON 4100 Series, or equal, with 7-inch wide threshold. The Contractor shall provide the services of the WSF approved manufacturer's factory technician for assistance in installation design, installation, and set up/light-off and adjustment.

The Passenger Deck-to-Picklefork double doors shall be provided with power actuated door systems on the "push" side of the door (installation requires a minimum of six (6) inch clearance above the door) and actuation switches. Each abovementioned, in this paragraph, Passenger Deck to Sun Deck door (two (2) per Vessel) shall be provided with HORTON 4100 Series, or equal, with 7-inch wide threshold. The Contractor shall provide the services of the WSF approved manufacturer's factory technician for assistance in installation design, installation, and set up/light-off and adjustment.

All closure installations shall be in strict accordance with the manufacturer's recommendations as to location, position, fasteners, adjustment, and the like.

See the *Fire Screen Door Release System* Subsection in Section 95 of the Technical Specification for de-energizing requirements.

TABLE 21-1

POWER ACTUATION DOOR APPLICATIONS

Min. Door Size &Type	Qty	Location	Actuation Switches (inside & out)
48" Swing	4	Upper Vehicle Deck to Passenger Deck (companionway at UVD Deck Level)	No, provide an approved IR electronic sensor operating system for door operation
36" Swing	1	Passenger Deck Unisex Restroom	Yes
72" Double Swing	4	Passenger Deck to Picklefork double	Yes
48" Swing	2	Passenger Deck to Sun Deck (Port and Starboard at Sun Deck Level)	No, provide an approved IR electronic sensor operating system for door operation
36" Swing	2	Sun Deck Unisex Restrooms	Yes

21.10 MAGNETIC HOLDBACKS

Various fire screen and fire rated doors shall be provided with ELOMEK 721/722, or equal, electromagnetic equipment to hold them in the open position. This equipment shall allow these doors to close when released from either Pilothouse or in the event of electrical power failure (See Section 95 of the Technical Specification). In addition, local switches shall be provided to interrupt the electromagnetic circuit allowing for local control. Should a location present itself where the Type 722 armature will not work, a 6 inch × 6 inch × ¼ inch steel spring loaded plate shall be attached to these doors to serve as the magnetic attachment surface. This plate shall be painted to match the door except for the surface facing the magnet. The magnetic hold open equipment shall be painted to match the surrounding decor and shall be tested for proper operation after installation. See the *DOORS* Subsection in Section 4 of the Technical Specification.

21.11 PANIC EXIT BAR

Passenger Deck midpoint double door panic exit bar shall be PRECISION Series FL-1205A-17, or equal, with two (2) vertical latching devices, US26D finish, and No. 17, cast blank escutcheon and “D” handle with thumb piece.

Panic exit bar function shall be entrance by “D” handle.

21.12 PUSH/PULL/KICK PLATES

Push/pull plates shall be BUILDERS BRASS WORK CORPORATION, or equal, heavy-duty, non-latching type. Plates shall be ⅛ inch thick stainless steel, 6 inches wide × 16 inches high, with beveled edges. Pull plates shall have extruded grips. Push plates shall be engraved with the word "PUSH". All doors fitted with push/pull plates shall be fitted on both sides of the door with twelve (12) inches high × full width kick plates of 20 USSG, No. 4 finish unpainted stainless steel. Push/pull plates shall be installed on all doors subject to Passenger use, as well as those locations identified in **TABLE 21-2**.

21.13 HASPS

Where applicable, all hasps shall be sized for WSF furnished, as Owner Furnished Equipment (OFE), MASTER #3 padlocks.

All hasps used in weather areas shall be Type 304, or better, stainless steel material.

21.14 MISCELLANEOUS HARDWARE

21.14.1 General

All doors shall be provided with door stops which preclude damage to the door and bulkhead from repeated commercial "forceful" usage.

21.14.2 No-Hold Open Door Stops

No-hold open door stops shall be heavy duty IVES part number 447, or equal.

21.14.3 Rubber Tipped Bumpers with Catch Hooks

Rubber-tipped bumpers with catch hooks shall be IVES part number 449 or 446 with 26D, or equal, satin nickel finish.

TABLE 21-2
Miscellaneous Hardware

ITEM	SPACE	QUANTITY PER SPACE
Door Stops	Throughout Vessel	One (1) per door except watertight doors
Hold Back Hooks	Throughout Vessel	All doors as allowed by Authoritative Agencies except to Passenger Restroom space doors
Stainless Steel Push/Pull Plates	All Passenger Access and Restrooms Doors	Both sides of door. Handle on pull side. "PUSH" and "PULL" permanently etched in plate.

The Contractor shall provide those items of miscellaneous hardware not specifically mentioned herein, but which would normally be required for a Vessel of this type. Hardware shall be heavy duty commercial or institutional quality.

The Contractor shall provide kick plates, push plates, door pulls, door stops, holdback hooks, bumpers and coat hooks as required by this Section, Sections 19 and 20 of the Technical Specification, and as otherwise necessary for proper outfit and operation of all doors.

21.15 SPARE PARTS AND INSTRUCTION MANUALS

Provide a list of recommended spare parts and special tools for those items which are Contractor furnished, together with parts lists and instruction manuals necessary to maintain and service provided equipment and accessories in accordance with the requirements of Sections 86 and 100 of the Technical Specification.

21.16 TESTS, TRIALS AND INSPECTIONS

The Contractor shall provide the services of the manufacturer's factory door representative for final fit, adjustment, and operation of all doors.

Tests and/or trials shall be in accordance with Section 101 of the Technical Specification.

Inspections shall be performed as defined in this Section and in Sections 1 and 2 of the Technical Specification.

21.17 PHASE II TECHNICAL PROPOSAL REQUIREMENTS

The following documentation, in addition to other deliverables required by Section 100 of the Technical Specification and the Authoritative Agencies, shall be provided during the Phase II Technical Proposal stage of Work in accordance with the requirements of Section 100 of this Technical Specification:

A. Hardware Catalog Specifications

Hardware Catalog Specifications shall be representative of all hardware types to be provided. Catalog specification sheets shall include pictorial representation, materials, quality, and weight information, and operation and installation instructions (if applicable).

Door hardware shall be described on the Joiner Door Schedule in accordance with the requirements of Section 4 of the Technical Specification.

21.18 PHASE III DETAIL DESIGN AND CONSTRUCTION REQUIREMENTS

The following documentation, in addition to other deliverables required by Section 100 of the Technical Specification and the Authoritative Agencies, shall be submitted during the Phase III Detail Design stage of Work in accordance with the requirements of Section 100 of the Technical Specification:

A. Hardware Samples

Hardware Samples shall be representative of all hardware types to be provided. Catalog specification sheets including quality and weight information, and operation and installation instructions (if applicable), shall be provided at the time of submittal of the samples.

The ***Key and Lock List,*** required in Section 100, shall include a full description of the key coding system and a listing of the quantity of keys to be supplied under each code designation of the system (grand masters, masters, sub masters, etc.).

Door hardware shall be fully described on the Joiner Door Schedule required under Section 4 of the Technical Specification.

See Section 100 of the Technical Specification for additional requirements regarding technical documentation.

(END OF SECTION)